

CLAIMS:

1 1. A liquid ink writing instrument comprising:
2 a body having a rear portion and a front portion, an ink reservoir at the rear
3 portion of said body, and a front chamber communicating with ambient air;
4 a writing head projecting from the front portion of said body;
5 a capillary element contained in said front chamber for transferring ink from
6 said reservoir to said writing head;
7 a valve separating said reservoir and said front chamber, said valve opening
8 when the ratio of the pressure inside said reservoir over the pressure inside a volume of said
9 front chamber facing said valve exceeds a first value, and reclosing instantly as soon as said
10 ratio becomes less than or equal to a second value, said valve releasing ink in the form of a jet
11 directed towards a rear face of said capillary element; and
12 means for pressurizing said reservoir.

1 2. A writing instrument according to claim 1, wherein said first value of the ratio
2 of the pressures is about 1.07, and said second value of said ratio is about 1.05.

1 3. A writing instrument according to claim 1, wherein said pressurizing means
2 are constituted by an elastically deformable zone of said body in register with said ink
3 reservoir.

1 4. A writing instrument according to claim 3, wherein said deformable zone is
2 formed by an elastomer diaphragm tensioned over a rigid portion of said body.

1 5. A writing instrument according to claim 4, wherein said elastomer diaphragm
2 is positioned over a lateral side of said body.

1 6. A writing instrument according to claim 3, wherein the capacity for
2 deformation and the area of said elastically deformable zone are determined so that during
3 unit actuation by a user, said valve releases a given quantity of ink.

1 7. An instrument according to claim 6, wherein said given amount of ink is in the
2 range 0.1 cm³ to 1 cm³.

1 8. A writing instrument according to claim 1, wherein said pressurizing means
2 are constituted by a piston placed at the rear end of said body.

1 9. A writing instrument according to claim 1, wherein said capillary element has
2 an ink-receiving rear face that is concave in shape, forming a receptacle for ink.

1 10. A writing instrument according to claim 9, wherein said concave surface has a
2 peripheral edge in the immediate vicinity of a peripheral edge of said valve.

1 11. A writing instrument according to claim 10, further comprising:
2 closure means suitable for hermetically sealing a rear portion of said front
3 chamber in the event of said capillary element becoming saturated with ink; and
4 means for reducing the inside volume of said rear portion of said front
5 chamber.

1 12. A writing instrument according to claim 11, wherein said closure means and
2 said volume reducing means are formed by a material that swells under the effect of being
3 saturated with ink.

1 13. A writing instrument according to claim 1, further comprising a transparent
2 tube having an upstream end in line with said valve and a downstream end opening out into
3 said capillary element.

1 14. A writing instrument according to claim 13, wherein:
2 said writing head is formed by a front portion of said capillary element; and
3 said transparent tube comprises a rear portion of a support piece for said
4 capillary element.

1 15. A liquid ink writing instrument comprising:
2 a body having a rear portion and a front portion, an ink reservoir at the rear
3 portion of said body, and a front chamber communicating with ambient air;
4 a writing head projecting from the front portion of said body;
5 a capillary element contained in said front chamber for transferring ink from
6 said reservoir to said writing head;
7 a valve separating said reservoir and said front chamber, said valve opening
8 when the ratio of the pressure inside said reservoir over the pressure inside a volume of said
9 front chamber facing said valve exceeds a first value, and reclosing instantly as soon as said
10 ratio becomes less than or equal to a second value, said valve releasing ink in the form of a jet
11 directed towards a rear face of said capillary element; and
12 means for pressurizing said reservoir;
13 wherein said valve comprises a flexible wall having shape memory and
14 provided with slots.